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STEPHEN D. SCANLON
JONES DAY
901 LAKESIDE AVENUE
CLEVELAND, OH 44114

EXAMINER	
MEEK, JACOB M	
ART UNIT	**PAPER NUMBER**
2637	

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Please find below and/or attached an Office communication concerning this application or proceeding.

d

Office Action Summary	Application No.	Applicant(s)
	09/934,299	THESLING ET AL.
	Examiner	**Art Unit**
	Jacob Meek	2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 27 May 2005.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) See Continuation Sheet is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 5,7,9,10,12-15,23,25,27,28,30-33,39,41-43,50-56,63,65,67,68,70-73,81,83,85-87,89, 90 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12 February 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 5,7,9,10,12-15,23,25,27,28,30-33,39,41-43,50-56,63,65,67,68,70-73,81,83,85-87, 89, and 90.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 5, 15, 23, 33, 39, 50, 56, 63 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al (US-6,618,452) in view of Fechtel et al (Efficient FFT and equalizer implementation for OFDM receivers; Consumer Electronics, IEEE Transactions on Volume 45, Issue 4, Nov 1999 Page(s):1104 – 1107) in further view of Sayeed (US-6,456,653).

With regard to claim 5, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59). Huber is silent with respect to location of down conversion in his system. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical

receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 15, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59). Huber is silent with respect to location of down conversion in his system. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to sampling rate of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claims 23, and 33, the functions of the apparatus are an embodiment of the method of Huber as discussed in claims 5 and 15, and therefore would have been obvious in view of the aforementioned rejection of claims 5 and 15.

With regard to claim 39, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 – 30) by: estimating residual carrier phase and frequency (see column 6, lines 44 – 51); and determining phase ambiguity and burst arrival time by detecting a unique pattern of symbol words in record of symbols (see column 3, lines 44 – 59) ; calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the step of processing further comprises a step of computing a FFT on a fixed block of symbols of record (see figure 26, 501 and column 13, lines 25 – 37). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on

Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 50, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), an estimator for estimating the phase and frequency of a residual carrier of carrier signal prior to removal of carrier signal (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 56, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), an estimator for estimating the phase and frequency of a residual carrier of carrier signal prior to removal of carrier signal (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 63, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing

sample waveform to in phase and frequency to remove carrier signal (see column 3, lines 13 – 30); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the phase and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to remove residual carrier (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 73, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the

phase and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to remove residual carrier (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

2. Claims 7, 13,14, 25, 31, 32, 51, 54, 55, 65, 71, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel.

With regard to claim 7, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the phase

and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to remove residual carrier (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to location of downconversion in his system. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph).

With regard to claim 13, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 – 30); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); indexing an arrival time of the burst information (see column 3, lines 54 – 59), and locating a unique bit pattern of symbols in record prior to performing the steps of calculating and indexing (see column 3, lines 44 – 59), wherein unique bit pattern of symbols is located in locating step by further correlating record of symbols with one or more predetermined sequences of symbols and selecting parameters associated with a maximum positive correlation of record of symbols and one or more predetermined sequences of symbols (see column 3, line 60 – column 5, line 15). Huber is silent with respect to location of downconversion in his system. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of

invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph).

With regard to claim 14, Huber discloses a method wherein parameters in step of selecting include a time offset value and a phase rotation value which are used to generate maximum positive correlation (see column 20, lines 26 – 56)

With regard to claim 25, the functions of the apparatus are an embodiment of the method of Huber as discussed in claim 7, and therefore would have been obvious in view of the aforementioned rejection of claim 7.

With regard to claims 31 and 32, the functions of the apparatus are an embodiment of the method of Huber as discussed in claim 13 and 14, and therefore would have been obvious in view of the aforementioned rejection of claims 13 and 14.

With regard to claim 51, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), an estimator for estimating the phase and frequency of a residual carrier of carrier signal prior to removal of carrier signal (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to

perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph).

With regard to claim 54, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a processor for processing sample waveform to in phase and frequency to remove carrier signal (see column 3, lines 13 – 30 and figure 26, 2605); a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), locating a unique pattern of symbols in record prior to performing steps of calculating and indexing, wherein unique bit pattern of symbols is located in locating step by further correlating record of symbols with one or more predetermined sequences of symbols and selecting parameters associated with a maximum positive correlation of record of symbols and one or more predetermined sequences of symbols (see column 3, line 60 – column 4, line 15). Huber is silent with respect to carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph).

With regard to claim 55, Huber discloses a method wherein parameters in step of selecting include a time offset value and a phase rotation value which are used to generate maximum positive correlation (see column 20, lines 26 – 56)

With regard to claim 65, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the phase and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to remove residual carrier (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph).

With regard to claim 71, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to in phase and frequency to remove carrier signal (see column 3, lines 13 – 30); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), locating a unique pattern of symbols in record prior to performing steps of calculating and indexing, wherein unique bit pattern of symbols is located in locating

step by further correlating record of symbols with one or more predetermined sequences of symbols and selecting parameters associated with a maximum positive correlation of record of symbols and one or more predetermined sequences of symbols (see column 3, line 60 – column 4, line 15). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph).

With regard to claim 72, Huber discloses a method wherein parameters in step of selecting include a time offset value and a phase rotation value which are used to generate maximum positive correlation (see column 20, lines 26 – 56).

3. Claims 9, 10, 27, 28, 41, 42, 52, 53, 67, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel in further view of Chiu et al (US-5,734,833).

With regard to claim 9, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the step of processing further comprises a step of computing a FFT on a fixed block of symbols

of record (see figure 26, 501 and column 13, lines 25 – 37). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unpadded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58)

With regard to claim 10, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 – 30); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the step of processing further comprises a step of computing a FFT on a fixed block of symbols of record (see figure 26, 501 and column 13, lines 25 – 37). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to a padded

group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

With regard to claim 27, the functions of the apparatus are an embodiment of the method of Huber as discussed in claim 9, and therefore would have been obvious in view of the aforementioned rejection of claim 9.

With regard to claim 28, the functions of the apparatus are an embodiment of the method of Huber as discussed in claim 10, and therefore would have been obvious in view of the aforementioned rejection of claim 10.

With regard to claim 41, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 – 30) by: estimating residual carrier phase and frequency (see column 6, lines 44 – 51); and determining phase ambiguity and burst arrival time by detecting a unique pattern of symbol words in record of symbols (see column 3, lines 44 – 59) ; wherein the step of processing further comprises a step of computing a FFT on a fixed block of symbols of record (see figure 26, 501 and column 13, lines 25 – 37). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver

configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unpadded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

With regard to claim 42, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 – 30) by: estimating residual carrier phase and frequency (see column 6, lines 44 – 51); and determining phase ambiguity and burst arrival time by detecting a unique pattern of symbol words in record of symbols (see column 3, lines 44 – 59) ; wherein the step of processing further comprises a step of computing a FFT on a fixed block of symbols of record (see figure 26, 501 and column 13, lines 25 – 37). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to a padded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

With regard to claim 52, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), and computing an FFT (see figure 26, 2605). Huber is silent with respect to carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unpadded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

With regard to claim 53, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage

processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), and computing an FFT (see figure 26, 2605). Huber is silent with respect to carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to a padded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

With regard to claim 67, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), and computing an FFT (see figure 26, 2605). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unpadded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It

would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

With regard to claim 68, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 – 12) and arrival time of the burst information (see column 3, lines 54 – 59), and computing an FFT (see figure 26, 2605). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to a padded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58).

4. Claims 12, 30, 43, and 70, are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel in further view of Sriram et al (US-6,754,251).

With regard to claim 12, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), and locating a unique bit pattern of symbols in record prior to performing the steps of calculating and indexing (see column 3, lines 44 – 59). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unique bit pattern of symbols is an extended Hamming code word compatible for use in FEC decoding. Sriram discloses a technique whereby unique word is used in error correction (see column 6, lines 35 –50). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the system of Sriram in order to significantly improve acquisition times (see '251, column 2, lines 63 – 67).

With regard to claim 30, the functions of the apparatus are an embodiment of the method of Huber as discussed in claim 12, and therefore would have been obvious in view of the aforementioned rejection of claim 12.

With regard to claim 41, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3,

lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 – 30) by: estimating residual carrier phase and frequency (see column 6, lines 44 – 51); and determining phase ambiguity and burst arrival time by detecting a unique pattern of symbol words in record of symbols (see column 3, lines 44 – 59) . Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unique bit pattern of symbols is an extended Hamming code word compatible for use in FEC decoding. Sriram discloses a technique whereby unique word is used in error correction (see column 6, lines 35 –50). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the system of Sriram in order to significantly improve acquisition times (see '251, column 2, lines 63 – 67).

With regard to claim 70, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity of the burst information (see column 10, lines 4 – 12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the phase and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to

remove residual carrier (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unique bit pattern of symbols is an extended Hamming code word compatible for use in FEC decoding. Sriram discloses a technique whereby unique word is used in error correction (see column 6, lines 35 –50). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the system of Sriram in order to significantly improve acquisition times (see '251, column 2, lines 63 – 67).

5. Claims 81 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel in further view of Sayeed ('653) in further view of GSM TDMA Standard.

With regard to claim 81, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 – 12) and arrival time (see column 3, lines 54 – 59) of the burst information. Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one

of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling. Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

With regard to claim 90, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 – 12). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times

oversampling. Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

6. Claims 83 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel et al in further view of GSM TDMA Standard.

With regard to claim 83, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 – 12) and arrival time (see column 3, lines 54 – 59) of the burst information; wherein the phase and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to remove residual carrier (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

With regard to claim 89, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A), calculating phase ambiguity (see column 10, lines 4 – 12) and arrival time (see column 3, lines 54 – 59) of the burst information; wherein unique bit pattern of symbols is located in locating step by further correlating record of symbols with one or more predetermined sequences of symbols and selecting parameters associated with a maximum positive correlation of record of symbols and one or more predetermined sequences of symbols (see column 3, line 60 – column 4, line 15). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

7. Claims 85, and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel in further view of Chiu et al ('833) in further view of GSM TDMA Standard.

With regard to claim 85, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled

waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 – 12) and arrival time of the burst information (see column 3, lines 54 – 59) and computing an FFT (see figure 26, 2605). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to an unpadded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58). Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

With regard to claim 86, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (column 10, lines 4 – 12) and an arrival time of the burst information (see column 3, lines 54 – 59) and computing an FFT (see figure 26, 2605). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier

and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to a padded group of symbols. Chiu discloses a frame structure which can use padding bytes (see figure 10, 793). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize fixed length frames in a TDMA system to avoid that collisions that lower system throughput (see Chiu, column 2, lines 50 – 58). Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

8. Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel in further view of Sriram et al ('251) in further view of GSM TDMA Standard.

With regard to claim 87, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 – 12) and arrival time of the burst information (see column 3, lines 54 – 59). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one

of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2^{nd} paragraph). Huber is silent with respect to an unique bit pattern of symbols is an extended Hamming code word compatible for use in FEC decoding. Sriram discloses a technique whereby unique word is used in error correction (see column 6, lines 35 – 50). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the system of Sriram in order to significantly improve acquisition times (see '251, column 2, lines 63 – 67). Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mixable training sequence. It therefore would have been obvious to utilize a mixable training sequence in order to comply with TDMA standards.

Other Cited Prior Art

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fu (US-6,772,181) discloses all trigonometric technique. Zangi (US-6,674,815), Walley (US-6,301,287), Hotani (US-5,953,378), and Taylor (US-5,764,693) all disclose apparatus and techniques related to applicant's invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571)272-2988. The fax

phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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JMM

JAY K. PATEL
SUPERVISORY PATENT EXAMINER